WHAT IS CLAIMED IS:

1. A method for producing permanent integral connections of oxide-dispersed metallic materials by welding, comprising:

supplying two materials or components of the materials to be connected to one another; overlapping the materials or components, one over the other, to form an overlapping region, including a joining region at the overlapping region;

heating the materials or components at the joining region below the melting temperatures of the materials on the components and there welding the materials or components to form, at least partially, a diffusion bond; and

subsequently heating the diffusion bond to a temperature below the melting temperature of the materials or components to be connected, and mechanically recompacting the diffusion bond.

2. The method of claim 1, wherein the materials or components to be connected have respective different melting temperatures with one of the materials or components have a higher melting temperature and the other of the materials or components having a lower melting temperature,

the method further comprising heating the materials to be connected in the joining region to a temperature in a range between 0.6 and 0.9 times the melting temperature of the material having the lower melting temperature.

3. The method of claim 1, wherein the mechanical recompaction of the diffusion bond occurs directly downstream and after the welding which forms, at least partially, a diffusion bond.

4. The method of claim 3, comprising mechanically recompacting the diffusion bond at a temperature corresponding to energy input from the welding.

5. The method of claim 1, wherein the mechanical recompaction after the welding is performed at a different time and at a different location than the welding.

6. The method of claim 1, wherein the materials or components to be connected have respective different melting temperatures with one of the materials or components have a higher melting temperature and the other of the materials or components having a lower melting temperature; and

the mechanical recompaction of the diffusion bond is performed after the welding and the heating of the diffusion bond before the mechanical recompaction is to a temperature in the range of 0.6 to 0.9 times the melting temperature of the material or component having the lower melting temperature.

7. The method of claim 6, wherein the diffusion bond is heated by a direct current flow.

8. The method of claim 1, further comprising the mechanical recompacting comprises applying a constant impact load to the diffusion bond by hammering on the bond.

9. The method of claim 8, wherein the diffusion bond has opposite sides at opposite sides of the materials or components at the diffusion bond and the method comprising applying the impact loading uniformly on both opposite sides of the diffusion bond.

10. The method of claim 1, further comprising performing the welding operation without a welding filler.

11. The method of claim 1, further comprising arranging a welding filler between the materials or components to be connected to one another in the joining region before the welding, and welding with the welding filler.

12. The method of claim 11, wherein the welding filler comprises at least one noble metal foil disposed between the materials or components to be connected in the joining region.

13. The method of claim 12, wherein the noble metal foil is a material more ductile than metal sheet.

14. The method of claim 12, wherein the noble metal foil has a thickness in the range of 20μm to 200 μm.

15. The method of claim 12, further comprising arranging two of the noble metal foils overlapping one another in the joining region.

16. The method of claim 11, wherein the components or materials to be connected in the joining region have respective contact areas which mutually face one another;

the method further comprising apply a noble metal coating on the mutually facing contact areas to be connected in the joining region wherein the coating defines a welding filler.

17. The method of claim 11, wherein the welding filler is selected from the group consisting of one or more alloys:

-PT

-PT-Ir

-Pt-Au

-Pt-Ph.

18. The method of claim 1, further comprising arranging the materials or components in the joining region to define a lap joint at the joining region.

19. The method of claim 1, further comprising arranging the materials or components to be connected to one another in the joining region so as to form an overlapping region including a parallel joint between the materials or components.

20. The method of claim 1, wherein the materials or components to be connected to one another each have a bevel in the joining region,

the method further comprising arranging the materials or components so that the bevels overlap.

21. The method of claim 20, wherein the bevels are defined by beveled faces which overlap in an overlapping region,

the method comprising arranging the oxide dispersed metallic materials in one plane and the overlapping regions extend over the entire beveled faces.

22. The method of claim 20, wherein the materials or components when connected at the joining region have a thickness and have a length of the bevels, and the length of the bevels corresponds to a range of two to five times the thickness of the joined materials or components at the joining region.

23. The method of claim 20, wherein the bevels are defined by respective beveled faces on the materials or components in the joining region, and at least one of the beveled faces in the joining region has an increased surface roughness with respect to other surface areas of the components.

24. The method of claim 23, further comprising providing the beveled faces with greater surface roughness during fabrication of the bevels or during a finishing operation performed on the beveled faces using an embossing roller.

25. The method of claim 20, wherein the bevels are defined by respective beveled faces on the materials or components in the joining region and the entire beveled faces in the joining region having an increased surface roughness with respect to other surface areas of the components.

26. The method of claim 23, wherein the roughened regions of the beveled faces have an average roughness depth of between 40μm and 120 μm.

27. The method of claim 1, further comprising connecting n oxide-dispersion-strengthened materials at a number of the joining regions which are parallel in a perpendicular sectional plane through the overlapping regions and between two of the components by setting the number of joining regions to be equal to n-1, wherein n ε [0.3].

28. The method of claim 1, wherein the overlapping region provides a plurality of joints of oxide-dispersed metallic material,

the method comprising locally bringing the joints into the flowable state one after the other progressively either in an advancing direction of a welding device for

welding or an advancing direction of the materials or components to be welded with respect to a welding device;

the bringing of the materials or components at the joining region into a flowable state comprises uniformly supplying heat at both sides of the material or component at the overlapping region in a heat affected zone for plastically unifying the materials or components under pressure;

the welding being performed such that there are neighboring welding points produced when individual joints are connected, and the distance between two neighboring welding joints produced when individual joints are connected is less than the dimension of a welding point in the advancing direction.

29. The method of claim 28, wherein the welding is performed by a seam-welding method, which produces seam connections, and the welding is performed so that the seam connections are in rows in the advancing direction.

30. The method of claim 28, further comprising welding points along the welding joint and the welding being performed so that neighboring ones of the welding points of the welding device or the materials or components form a seam with either no variations or very small variations in the seam thickness in the advancing direction.

31. The method of claim 1, further comprising heating the materials or components to bring them joints the flowable state by providing at least one of energy sources selected from the group consisting of electrical energy, ultrasound and induction.

32. The method of claim 31, wherein the welding comprises resistance

welding by inducing at both sides of the materials and components in the joining region a heat of fusion using at least one welding electrode, and connecting the welding electrode to a power source and supplying brief action of electric current on the welding electrode, the welding being produced as a result of the high transition resistance at the component during the welding.

33. The method of claim 32, further comprising controlling the melting depths on the oxide dispersed metallic materials as a function of at least one of the current intensity, the rate of relative advancement of at least one of the welding electrode and the materials or components being welded with respect to the other one, and the contact pressure.

34. The method of claim 32, further comprising using a roller seam-welding method for the resistance welding and using rotably mounted rolling electrode as the welding electrodes on both sides at the overlapping region,

the method further comprising driving at least one of the electrodes to rotate and causing the electrodes to exert pressure on the materials or components being welded.

35. The method of claim 34, further comprising mounting and adjusting the rolling electrodes displaceably with respect to the materials and components to be welded for enabling adjustment of the contact pressure.

36. The method of claim 31, further comprising using a TIG welding method modifiable with respect to the energy input to the welding device.

37. The method of claim 1, wherein the materials or components to be welded are of respective different materials.

38. The method of claim 37, wherein the materials or components to be welded consist of an oxide-dispersed material based on Pt-ODS or Pt-Au5-ODS or PtRh10-ODS.

39. The method of claim 1, wherein the materials or components to be welded at least at the joining region comprise materials which are not strengthened, whereby the welding is of purely fusion-alloy materials or components.

40. The method of claim 39, wherein the materials or components consist of materials based on Pt, Pt-Au, Pt-Rh or Pt-Ir.

41. The method of claim 1, wherein the materials or components which are to be welded have different respective thicknesses.

42. The method of claim 1, wherein a combined gravity and overhead position defines the welding position of the materials or components at the joint.

43. The method of claim 1, wherein the materials or components to be welded are arranged in a welding position comprised of a perpendicular arrangement of the components and a transverse position of a device which performs the welding.

44. A structural element formed of oxide- dispersed materials, wherein the element comprises at least two components which have been connected to each other according to the method of claim 1.

45. The structural element of claim 44, wherein the element is formed and

shaped as a guiding element for guiding glass melts.

46. The structural element of claim 45, wherein the element is configured as a channel or pipe.

47. The structural element of claim 44, wherein the element is formed as an assembly for glass melt homogenization.

48. The structural element of claim 47, wherein the element is configured as a clarification pan, a stirring crucible or a stirrer.

49. The structural element of claim 45, wherein the element is configured as a component part of a feed system or a hot-molding system.